Amendments

In the Claims:

The following listing of claims will replace all prior versions, and listings, of claims in the application. Claims 1-80 have been canceled. Please add new claims 81-102. Currently amended claims are shown with additions underlined and deletions in ~~strikethrough text~~. No new matter is added by these amendments.

1.-80. (Canceled)

81. (New) A method for quantifying an amount of a target protein in a biological sample, the target protein including a monitor peptide produced by digestion of the biological sample by a proteolytic agent, a mixture of the digested biological sample and a known amount of a labeled version of the monitor peptide being a peptide mixture, comprising:

exposing the peptide mixture to an antibody configured to bind to the monitor peptide and to the labeled version of the monitor peptide, the monitor peptide bound to the antibody and the labeled version of the monitor peptide bound to the antibody being bound peptides, peptides produced by the digestion of the sample not bound to the antibody being unbound peptides;

separating bound peptides from unbound peptides;

measuring the relative amounts of the monitor peptide and the labeled version of the monitor peptide in the bound peptides using a mass spectrometer; and

calculating the amount of the monitor peptide in the peptide mixture.

82. (New) The method of claim 81, further comprising:

separating bound peptides from the antibody.

83. (New) The method of claim 81, further comprising:

calculating the amount of the target protein in the biological sample.

84. (New) The method of claim 81, wherein the antibody is a monoclonal antibody.

85. (New) The method of claim 81, wherein the antibody is a polyclonal antibody.

86. (New) The method of claim 81, wherein the antibody is a recyclable antibody.

87. (New) The method of claim 81, further comprising:
preparing the labeled version of the first monitor peptide.

88. (New) The method of claim 81, wherein the labeled version of the first monitor peptide includes a stable isotope.

89. (New) The method of claim 81, further comprising:
attaching the antibody to a support.

90. (New) The method of claim 81, further comprising:
attaching the antibody to a packed column.

91. (New) The method of claim 81, further comprising:
attaching the antibody to a monolithic porous support.

92. (New) The method of claim 81, further comprising:
attaching the antibody to a mesh.

93. (New) The method of claim 81, further comprising:
attaching the antibody to magnetic beads.

94. (New) The method of claim 81, wherein the monitor peptide is selected from among the peptides produced by digesting the target protein with the proteolytic agent for optimal detection efficiency in the mass spectrometer.

95. (New) The method of claim 81 further comprising:

using the monitor peptide or a non-materially modified version of the monitor peptide in an antibody generation process to prepare the antibody.

96. (New) The method of claim 81, further comprising:

creating the antibody using the monitor peptide or a non-materially modified version of the monitor peptide.

97. (New) A method for quantifying an amount of a target protein in a biological sample, the target protein including a monitor peptide produced by digestion of the biological sample by a proteolytic agent, a mixture of the digested biological sample and a known amount of a labeled version of the monitor peptide being a peptide mixture, comprising:

exposing the peptide mixture to an antibody configured to specifically bind to the monitor peptide and to the labeled version of the monitor peptide, the antibody being produced by an antibody generation process using a quantity of the monitor peptide or a non-materially modified version of the monitor peptide, the monitor peptide bound to the antibody and the labeled version of the monitor peptide bound to the antibody being bound peptides, peptides produced by the digestion of the sample not bound to the antibody being unbound peptides

separating bound peptides from unbound peptides;

measuring the relative amounts of the monitor peptide and the labeled version of the monitor peptide in the bound peptides using a mass spectrometer; and

calculating the amount of the monitor peptide in the peptide mixture.

98. (New) The method of claim 97, wherein the antibody generation process includes immunization of an animal with an antigen that includes the monitor peptide or a non-materially modified version of the monitor peptide.

99. (New) The method of claim 97, wherein the antibody generation process includes affinity purification of a polyclonal antibody on a support comprising the monitor peptide or a non-materially modified version of the monitor peptide.

100. (New) The method of claim 97, wherein the antibody generation process includes selection of a monoclonal or recombinant antibody using an assay configured to detect binding to the monitor peptide or a non-materially modified version of the monitor peptide.

101. (New) The method of claim 97, further comprising:
preparing the labeled version of the monitor peptide.

102. (New) The method of claim 97, wherein the labeled version of the monitor peptide includes a stable isotope.